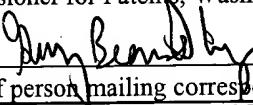


PATENT
ATTORNEY DOCKET NO. 50082/015002

Certificate of Mailing: Date of Deposit: October 11, 2001

I hereby certify under 37 C.F.R. § 1.8(a) that this correspondence is being deposited with the United States Postal Service as **Express Mail Post Office to Addressee** with sufficient postage on the date indicated above and is addressed to: **BOX PATENT APPLICATION, Assistant Commissioner for Patents, Washington, D.C. 20231.**

Guy Beardsley
Printed name of person mailing correspondence


Signature of person mailing correspondence

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Grant McFadden et al.	Art Unit:	Not Assigned Yet
Serial No.:	Not Assigned Yet	Examiner:	Not Assigned Yet
Filed:	October 11, 2001	Customer No.:	21559
Title:	NUCLEIC ACID MOLECULES AND POLYPEPTIDES FOR IMMUNE MODULATION		

Assistant Commissioner For Patents
Washington, D.C. 20231

STATEMENT UNDER 37 C.F.R. § 1.821

As part of the patent application filed herewith, enclosed is a sequence listing in accordance with the requirements of 37 C.F.R. §§ 1.821 through 1.825 and consisting of six pages.

As required by 37 C.F.R. § 1.821(c), the sequence listing appears as a separate part of the application and is found after the Combined Declaration and Power of Attorney. Each sequence in the application appears separately in the sequence listing. And each sequence in the sequence listing is assigned a separate sequence identifier.

As required by 37 C.F.R. § 1.821(d), the sequence identifiers are used throughout

the application description and claims to refer to their respective sequences.

As required by 37 C.F.R. § 1.821(e), enclosed is a diskette containing a copy of the sequence listing in computer readable form.

As required by 37 C.F.R. § 1.821(f), I hereby state that the contents of the computer readable form are the same as the contents of the paper copy.

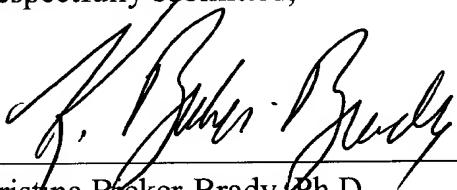
As required by 37 C.F.R. § 1.821(g), I hereby state that this submission contains no new matter.

If there are any charges, or any credits, please apply them to Deposit Account No.

03-2095.

Respectfully submitted,

Date: October 11, 2001


Krishna Breker-Brady, Ph.D.
Reg. No. 39,109

Clark & Elbing LLP
176 Federal Street
Boston, MA 02110
Telephone: 617-428-0200
Facsimile: 617-428-7045



21559

PATENT TRADEMARK OFFICE

SEQUENCE LISTING

<110> MCFADDEN, GRANT
ESSANI, KARIM

<120> NUCLEIC ACID MOLECULES AND POLYPEPTIDES
FOR IMMUNE MODULATION

<130> 50082/015002

<150> US 60/239,354

<151> 2000-10-11

<160> 9

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 26

<212> PRT

<213> Tanapox virus

<400> 1

Ile Thr Leu Lys Tyr Cys Tyr Thr Val Thr Leu Lys Asp Asn Gly Leu
1 5 10 15
Tyr Asp Lys Val Phe Tyr Cys His Tyr Asn
20 25

<210> 2

<211> 338

<212> PRT

<213> Yaba Monkey tumor virus

<400> 2

Met Asn Lys Leu Ile Leu Phe Ser Thr Ile Val Ala Val Cys Asn Cys
1 5 10 15
Ile Thr Leu Lys Tyr Asn Tyr Thr Val Thr Leu Lys Asp Asn Gly Leu
20 25 30
Tyr Asp Gly Val Phe Tyr Asp His Tyr Asn Asp Gln Leu Val Thr Lys
35 40 45
Ile Ser Tyr Asn His Glu Thr Arg His Gly Asn Val Asn Phe Arg Ala
50 55 60
Asp Trp Phe Lys Ile Ser Arg Ser Pro His Thr Pro Gly Asn Asp Tyr
65 70 75 80
Asn Phe Asn Phe Trp Tyr Ser Leu Met Lys Glu Thr Leu Glu Glu Ile
85 90 95
Asn Lys Asn Asp Ser Thr Lys Thr Ser Leu Ser Leu Ile Thr Gly
100 105 110
Cys Tyr Glu Thr Gly Leu Leu Phe Gly Ser Tyr Gly Tyr Val Glu Thr
115 120 125
Ala Asn Gly Pro Leu Ala Arg Tyr His Thr Gly Asp Lys Arg Phe Thr
130 135 140
Lys Met Thr His Lys Gly Phe Pro Lys Val Gly Met Leu Thr Val Lys
145 150 155 160
Asn Thr Leu Trp Lys Asp Val Lys Thr Tyr Leu Gly Gly Phe Glu Tyr

165	170	175	
Met Gly Cys Ser Leu Ala Ile Leu Asp Tyr Gln Lys Met Ala Lys Gly			
180	185	190	
Glu Ile Pro Lys Asp Thr Thr Pro Thr Val Lys Val Thr Gly Asn Glu			
195	200	205	
Leu Glu Asp Gly Asn Met Thr Leu Glu Cys Ser Val Asn Ser Phe Tyr			
210	215	220	
Pro Pro Asp Val Ile Thr Lys Trp Ile Glu Ser Glu His Phe Lys Gly			
225	230	235	240
Glu Tyr Lys Tyr Val Asn Gly Arg Tyr Tyr Pro Glu Trp Gly Arg Lys			
245	250	255	
Ser Asp Tyr Glu Pro Gly Glu Pro Gly Phe Pro Trp Asn Ile Lys Lys			
260	265	270	
Asp Lys Asp Ala Asn Thr Tyr Ser Leu Thr Asp Leu Val Arg Thr Thr			
275	280	285	
Ser Lys Met Ser Ser Gln Leu Val Cys Val Val Phe His Asp Thr Leu			
290	295	300	
Glu Ala Gln Val Tyr Thr Cys Ser Glu Gly Cys Asn Gly Glu Leu Tyr			
305	310	315	320
Asp His Leu Tyr Arg Lys Thr Glu Glu Gly Glu Gly Glu Asp Glu			
325	330	335	
Glu Asp			

<210> 3
 <211> 1183
 <212> DNA
 <213> Yaba Monkey tumor virus

<400> 3
 atgaataagt taattttatc gttgtgggt tttgtggcaa cttgcaattt tataacctta 60
 agatataatt ataccgttac ggttaaagaat ggattatacg acggggattt ttttgattat 120
 tacaacgatc agttagtaac gaggatatac tataaccatg aaactagaca cggaaacgtt 180
 aattcttagag cttcatggtt tgatatatctt aaaaggccctc atactccggg tgacgattac 240
 cactttaact tttggtaccc gtaatgaaa gatactttgg agtccatcaa tagtaataaa 300
 aacgaaagcg ataaatgttc ttctgtgtcg ttaattttgg ggtttagt aacggatct 360
 cttttggga gttacggata cgtttagtca agtggcggac cgttggctag gtatagcacg 420
 aaagataaaa agttttaaa aatgacagat aaaggatttc caaagggttgg aatgttaacc 480
 gttcatggtc ctatggca aacagttaaa aaatacgtgg gagggtttggt gtacgctgga 540
 tggttgctag ctattttga ttatcaaaaa atggctaaga ataacatacc tagtaatgtt 600
 atgccaactg ttacggtaac gggtgaggaa ctgcaagatg gtaacacaac gcttaagtgt 660
 aacgtaaaat cttttaccc tccagacgtt atgatcaagt ggatagaaaag taaatatttt 720
 aacggtaat atagatacgt taatggaga gaatacccg aatggggaaag gcaatcagat 780
 tatgagcccg gagagccagg tttccgtt catccaaaaa aagatgacgg taaaaccact 840
 tacagcctt tagattttgg tcgcactacg tcaggattaa ctatgcgtt agtttgggtt 900
 gtttccatg acacgttta atcgcaggtt aatacatgtt ccgaagggtt gtaaggtaaa 960
 ttatacgtac acctatatacg aaaatcgaaa gaaggagacg aggttggaa ggacgaagaa 1020
 gactgaaaac aagtcgtgtt ggaagctgtt ctgatcgcc gtttacgtt ccgcgtacg 1080
 gaagtttgcc gcccggaggg gcgatgtttt ttttaaaaaaa tgaaaaaagta gatgataccg 1140
 agcgatgacc gcgaaatgga ggttattaca gacggcgtgt tcg 1183

<210> 4
 <211> 338
 <212> PRT
 <213> Tanapox virus

<400> 4
 Met Asn Lys Leu Ile Leu Phe Ser Thr Ile Val Ala Val Cys Asn Cys

1	5	10	15
Ile Thr Leu Lys Tyr Asn Tyr Thr Val	Thr Leu Lys Asp Asn Gly Leu		
20	25	30	
Tyr Asp Gly Val Phe Tyr Asp His Tyr	Asn Asp Gln Leu Val Thr Lys		
35	40	45	
Ile Ser Tyr Asn His Glu Thr Arg His	Gly Asn Val Asn Phe Arg Ala		
50	55	60	
Asp Trp Phe Lys Ile Ser Arg Ser Pro	His Thr Pro Gly Asn Asp Tyr		
65	70	75	80
Asn Phe Asn Phe Trp Tyr Ser Leu Met	Lys Glu Thr Leu Glu Glu Ile		
85	90	95	
Asn Lys Asn Asp Ser Thr Lys Thr Ser	Leu Ser Leu Ile Thr Gly		
100	105	110	
Cys Tyr Glu Thr Gly Leu Leu Phe Gly	Ser Tyr Gly Tyr Val Glu Thr		
115	120	125	
Ala Asn Gly Pro Leu Ala Arg Tyr His	Thr Gly Asp Lys Arg Phe Thr		
130	135	140	
Lys Met Thr His Lys Gly Phe Pro Lys	Val Gly Met Leu Thr Val Lys		
145	150	155	160
Asn Thr Leu Trp Lys Asp Val Lys Thr	Tyr Leu Gly Gly Phe Glu Tyr		
165	170	175	
Met Gly Cys Ser Leu Ala Ile Leu Asp	Tyr Gln Lys Met Ala Lys Gly		
180	185	190	
Glu Ile Pro Lys Asp Thr Thr Pro Thr	Val Lys Val Thr Gly Asn Glu		
195	200	205	
Leu Glu Asp Gly Asn Met Thr Leu Glu	Cys Ser Val Asn Ser Phe Tyr		
210	215	220	
Pro Pro Asp Val Ile Thr Lys Trp Ile	Glu Ser Glu His Phe Lys Gly		
225	230	235	240
Glu Tyr Lys Tyr Val Asn Gly Arg Tyr	Tyr Pro Glu Trp Gly Arg Lys		
245	250	255	
Ser Asp Tyr Glu Pro Gly Glu Pro Gly	Phe Pro Trp Asn Ile Lys Lys		
260	265	270	
Asp Lys Asp Ala Asn Thr Tyr Ser Leu	Thr Asp Leu Val Arg Thr Thr		
275	280	285	
Ser Lys Met Ser Ser Gln Leu Val Cys	Val Val Phe His Asp Thr Leu		
290	295	300	
Glu Ala Gln Val Tyr Thr Cys Ser Glu	Gly Cys Asn Gly Glu Leu Tyr		
305	310	315	320
Asp His Leu Tyr Arg Lys Thr Glu Glu	Gly Glu Glu Asp Glu		
325	330	335	
Glu Asp			

<210> 5
<211> 1034
<212> DNA
<213> Tanapox virus

<400> 5

aagcttcatg

tttaaaaata

```
<400> 5
aagcttcatg aataagttaa tattathtag cacaattgtt gcagtttgc actgcataac 60
tttaaaatat aattatactg ttacgttaaa agataatggg ttatacgtt gagtattttt 120
cgatcattac aacgatcagt tagtaacgaa aatatcatat aaccacgaaa ctagacacgg 180
aaacgttaat ttagggctg attggtttaa tatttctagg agtccccaca cgccaggttt 240
cgattacaac ttaactttt ggtattcttt aatggaaagaa acttttagaag aaattaataa 300
aaacgatagc aaaaaaacta cttcgcttcc attaatcact gggtgttatg aaacaggatt 360
attatgggt agttatgggt atgtagaaac ggccaaacggg ccgttggcca gataccatcc 420
aggagataaa aggtttacga aatgacaca taaagggttt cccaaagggtt gaatgttaac 480
```

tgtaaaaaac actctttgga aagatgtaaa aacttatcta ggcgggtttg aatacatggg 540
atgttcatta gctattttag attaccaaaa aatggctaaa ggtgaaatac caaaagatac 600
aacacctaca gtgaaagtaa cgggtaatga gttagaagat ggttaacatga ctcttgaatg 660
cagtgtaaat tcattttacc ctcctgacgt aattactaag tggatagaaa gcgAACATT 720
taaagggtgaa tataaaatatg ttaacggaaatg atactatcca gaatggggga gaaaatccga 780
ttatgagcca ggagagccag gttttccatg gaatattaaa aaagataaag atgcaaaacac 840
ata>tagtttta acagatttag tacgtacaaac atcaaaaatg agtagtcaac tagtatgtgt 900
tgttttccat gacacttttag aagcgcaagt ttatacttgt tctgaaggat gcaatggaga 960
gtatatacgac cacatatata gaaaaacaga agaaggagaa ggtgaagagg atgaagaaga 1020
cgaaaaaccct cgag 1034

<210> 6

<211> 338

<212> PRT

<213> Yaba-like disease virus

<400> 6

Met Asp Lys Leu Leu Phe Ser Thr Ile Val Ala Val Cys Asn Cys
1 5 10 15
Ile Thr Leu Lys Tyr Asn Tyr Thr Val Thr Leu Lys Asp Asp Gly Leu
20 25 30
Tyr Asp Gly Val Phe Tyr Asp His Tyr Asn Asp Gln Leu Val Thr Lys
35 40 45
Ile Ser Tyr Asn His Glu Thr Arg His Gly Asn Val Asn Phe Arg Ala
50 55 60
Asp Trp Phe Asn Ile Ser Arg Ser Pro His Thr Pro Gly Asn Asp Tyr
65 70 75 80
Asn Phe Asn Phe Trp Tyr Ser Leu Met Lys Glu Thr Leu Glu Glu Ile
85 90 95
Asn Lys Asn Asp Ser Thr Lys Thr Ser Leu Ser Leu Ile Thr Gly
100 105 110
Cys Tyr Glu Thr Gly Leu Leu Phe Gly Ser Tyr Gly Tyr Val Glu Thr
115 120 125
Ala Asn Gly Pro Leu Ala Arg Tyr His Thr Gly Asp Lys Arg Phe Thr
130 135 140
Lys Met Thr His Lys Gly Phe Pro Lys Val Gly Met Leu Thr Val Lys
145 150 155 160
Asn Thr Leu Trp Lys Asp Val Lys Ala Tyr Leu Gly Gly Phe Glu Tyr
165 170 175
Met Gly Cys Ser Leu Ala Ile Leu Asp Tyr Gln Lys Met Ala Lys Gly
180 185 190
Lys Ile Pro Lys Asp Thr Thr Pro Thr Val Lys Val Thr Gly Asn Glu
195 200 205
Leu Glu Asp Gly Asn Met Thr Leu Glu Cys Thr Val Asn Ser Phe Tyr
210 215 220
Pro Pro Asp Val Ile Thr Lys Trp Ile Glu Ser Glu His Phe Lys Gly
225 230 235 240
Glu Tyr Lys Tyr Val Asn Gly Arg Tyr Tyr Pro Glu Trp Gly Arg Lys
245 250 255
Ser Asn Tyr Glu Pro Gly Glu Pro Gly Phe Pro Trp Asn Ile Lys Lys
260 265 270
Asp Lys Asp Ala Asn Thr Tyr Ser Leu Thr Asp Leu Val Arg Thr Thr
275 280 285
Ser Lys Met Ser Ser Gln Pro Val Cys Val Val Phe His Asp Thr Leu
290 295 300
Glu Ala Gln Val Tyr Thr Cys Ser Glu Gly Cys Asn Gly Glu Leu Tyr
305 310 315 320
Asp His Leu Tyr Arg Lys Thr Glu Glu Gly Glu Gly Glu Asp Glu
325 330 335

Glu Asp

<210> 7
<211> 1017
<212> DNA
<213> Yaba-like disease virus

```

<400> 7
atggataagt tactattatt tagcacaatt gtagcagtt gtaactgcatt aactttaaaa 60
tataattata ctgttacgtt aaaagatgat gggttatacg atggagtatt ttacgatcat 120
tacaacgatc agttagtgac gaaaatatac tataaccatg aaactagaca cggaaacgta 180
aatttttaggg ctgattggtt taatatttct aggagtcggg acacgccagg taacgattat 240
aactttaact tttggtattc ttaatgaaa gaaactttag aagaaattaa taaaaacgat 300
agcacaaaaaa ctacttcgct ttcattaaatc actgggtgtt atgaaaacagg attatttattt 360
ggtagttatg ggtatgtaga aacggccaac gggccgttgg ccagatacc a tacaggat 420
aaaaggttta cgaaaatgac acataaaagg tttcccaagg ttggaatgtt aactgtaaaa 480
aacactttt gggaaagatgt aaaagctt attagccgggtt ttgaatataat gggatgttca 540
ttagctattt tagattacca aaaaatggct aaaggtaaaa taccaaaaga tacaacacct 600
acagtggaaag taacgggtaa tgagtttagaa gatggtaaca tgactcttga atgcactgt 660
aattcattttt accctcctga cgttaattact aagtggataag aaagcgaaca ttttaaagg 720
gaatataaaat atgtaaacgg aagatactat ccagaatggg ggagaaaatc caattatgag 780
ccaggagagc caggtttcc atggaatatac aaaaaagata aagatgcaaa tacatatagt 840
ttaacagatt tagtacgtac aacatcaaaa atgagtagtc aaccagtatg tggtgtttc 900
catgacactt tagaagcgca agtttatact tggctgtaaag gatgcaatgg agagctatac 960
gatcacctat atagaaaaaac agaagaaggg gaaggtgtaaag aggatgaaga agactgt 1017

```

<210> 8
<211> 340
<212> PRT
<213> Swinepox virus (C1L)

```

<400> 8
Met Ile Thr Lys Ala Ile Val Ile Leu Ser Ile Ile Thr Ala Tyr Val
1 5 10 15
Asp Ala Ser Ala Phe Leu Val Tyr Asn Tyr Thr Tyr Thr Tyr Leu Gln Asp
20 25 30
Asp Asn His Arg Tyr Asp Phe Glu Val Thr Asp Tyr Phe Asn Asp Ile
35 40 45
Leu Ile Lys Arg Leu Lys Leu Asn Ser Glu Thr Gly Arg Pro Glu Leu
50 55 60
Arg Asn Glu Pro Pro Thr Trp Phe Asn Glu Thr Lys Ile Arg Tyr Tyr
65 70 75 80
Pro Lys Asn Asn Tyr Asn Phe Met Phe Trp Leu Asn Arg Met Ser Glu
85 90 95
Thr Leu Asp Glu Ile Asn Lys Leu Pro Glu Thr Ser Asn Pro Tyr Lys
100 105 110
Thr Met Ser Leu Thr Ile Gly Cys Thr Asp Leu Arg Gln Leu Gln Val
115 120 125
Asn Phe Gly Tyr Val Thr Val Gly Gly Asn Ile Trp Thr Arg Phe Asp
130 135 140
Pro Lys Asn Lys Arg Phe Ser Lys Val Arg Ser Arg Thr Phe Pro Lys
145 150 155 160
Val Gly Met Leu Thr Val Lys Ser Gln His Trp Glu Arg Val Met Glu
165 170 175
His Leu Gly Ser Met Val Thr Leu Thr Cys Pro Phe Thr Ala Asp Asp
180 185 190
Tyr Tyr Lys Ile Ser Lys Gly Tyr Ile Asp Lys Pro Val Lys Pro Thr

```

195	200	205	
Val Thr Val Thr Gly Ile Glu Arg Gly Asp Asn Thr Thr Leu Ile Cys			
210	215	220	
Thr Phe Asp Asn His Tyr Pro Ser Ser Val Ala Val Lys Trp Tyr Asn			
225	230	235	240
Ile Glu Asp Phe Ala Pro Asp Tyr Arg Tyr Asp Pro Tyr Val Asn Glu			
245	250	255	
Leu Leu Pro Asp Thr Asp Tyr Leu Pro Gly Glu Pro Gly Tyr Pro Thr			
260	265	270	
Ile Thr Arg Arg Leu Gly Asp Lys Tyr Leu Phe Thr Ser Ser Pro Arg			
275	280	285	
Val Met Val Pro Thr Ile Met Ser Asn Arg Ile Ala Cys Val Gly Phe			
290	295	300	
His Ser Thr Leu Glu Pro Ser Ile Tyr Arg Cys Val Asn Cys Ser Gly			
305	310	315	320
Pro Glu Pro Val Leu Gln Tyr Gln Gly Asp Arg Arg Asn Asp Leu Glu			
325	330	335	
Asp Glu Glu Asp			
340			

<210> 9
 <211> 1023
 <212> DNA
 <213> Swinepox virus (C1L)

<400> 9
 atgattacta aaggcattgt gatattgtct attattacag catatgtaga tgcttccgca 60
 ttcttagtat acaattatac atatacttta caagatgata atcatcgata tgacttcgaa 120
 gtcaccgatt atttaatga tatactaata aaacgtttaa aactaaatag cgagacagga 180
 agaccagaat taagaatga accaccaaca tggtttaatg agactaagat tagatattat 240
 ccgaaaaata attataattt tatgttctgg ctaaatagaa tgagtgaaac gctagatgag 300
 ataaataaac ttccagaaac gagtaatcct tacaagacta tgccttgac aattggatgt 360
 actgatctaa gacaacttca agtaaatttc ggttatgtta ctgttagtgg taatatatgg 420
 acacgattcg accccaagaa taaacgctt agtaaagttt gatcacgtac atttccaaag 480
 gtaggaatgt taactgttta atcacaacac tggAACgtg ttatggaaaca tcttggatca 540
 atggtaacat taacatgtcc gtttacagcg gatgattatt ataaaatttc taagggatat 600
 atagataagc cagtaagcc tactgttaca gttacaggaa ttgaaagagg agataatact 660
 acattgatat gcacatttga taatcattat ccgtcgctgg tcgctgttaa atggataac 720
 atcgaggact ttgctccgga ctatcgttat gatccgtacg taaatgaatt gcttcctgat 780
 acggactatc taccgggtga accaggatata ccgactataa ctaggagatt aggtgataaa 840
 tatttattta catcatcacc tagggttatg gtaccaacta tcatgtctaa tagaatagca 900
 tgggttggat ttcatagttac gttagaacca agcatatata gatgtgtaaa ctgctcggga 960
 cctgagcctg tttacaata ccagggagat agaaggaatg acttggagga tgaggaggat 1020
 taa 1023